





## MISCELLANEOUS PUBLICATIONS—NO. 39

## HOUSEHOLD WEIGHTS AND MEASURES

The object of this card is to present in convenient form the weights and measures tables most useful for household purposes. In addition to the capacity measures illustrated, every kitchen should be provided with a good household weights and measures test set. This will be found indispensable in checking the amounts of commodities purchased and very useful for a variety of other purposes. A complete set comprises a weighing scale of from 10 to 30 pounds capacity or more graduated to 1 ounce or less, a set of liquid measures, a yard measure or a tape 3 or 6 feet in length, and, perhaps, a set of dry measures. These pieces should be of simple but rugged construction and of satisfactory accuracy and should, whenever possible, be tested by and bear the seal of a weights and measures official.

## Common Kitchen Measures.

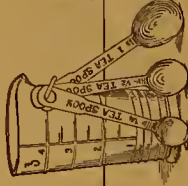
## EQUIVALENTS OF CAPACITY.

(All measures level full.)

3 teaspoons	=	1 tablespoon.
$\frac{1}{4}$ fluid ounce	=	
16 tablespoons	=	
2 gills	=	1 cup.
$\frac{1}{2}$ liquid pint	=	
8 fluid ounces	=	
1 liquid pint	=	2 cups.
16 fluid ounces	=	

## Liquid Measure.

4 fluid ounces	=	1 gill.
4 gills	=	1 quart.
2 pints	=	1 quart.
4 quarts	=	1 gallon (231 cubic inches).
3 $\frac{1}{2}$ gallons	=	1 barrel.
2 barrels	=	1 hoghead.



## Dry Measure.

(For fruits, vegetables, and other dry commodities.)

2 pints	=	1 quart.
8 quarts	=	1 peck.
4 pecks	=	1 bushel (2150.42 cubic inches).
105 quarts	=	1 barrel (7056 cubic inches).

The pint and quart dry measures are about 16 per cent larger than the pint and quart liquid measures.

## Avoirdupois Weight.

27 $\frac{1}{2}$ grains	=	1 dram.
16 drams	=	1 ounce.
16 ounces	=	1 pound.
4 quarters	=	1 hundredweight.
20 hundredweight	=	1 ton.
{ Short hundredweight = 112 pounds. { Long hundredweight = 100 pounds. { Short ton = 2,000 pounds. { Long ton = 2,240 pounds.		

## Approximate Weights of Some Common Dry Commodities.

Pounds per bushel.		Pounds per bushel.	
Apples	48	Peaches	48
Beans	60	Peanuts	22
Beets	60	Pears	58
Carrots	50	Pears (dried)	60
Cranberries	32	Pears (green, unshelled)	56
Cucumbers	48	Potatoes (white)	54
Onions	57	Potatoes (sweet)	54
Parsnips	50	Tomatoes	56
		Turnips	55
Rice: 1 cup = $\frac{1}{2}$ pound. Cornmeal: 1 cup = 5 ounces. Raisins (stemmed): 1 cup = 6 ounces. Currants (cleaned): 1 cup = $\frac{1}{2}$ pound. Butter: 1 cup = $\frac{1}{2}$ pound. Lard: 1 cup = $\frac{1}{2}$ pound. Flour: 1 cup = $\frac{1}{2}$ pound. Chopped meat (packed): 1 cup = $\frac{1}{2}$ pound.			

These weights are approximate only and should therefore not be used in determining whether correct measure is given or received.

<sup>1</sup> Circular of the Bureau of Standards No. 55, entitled "Measurements for the Household," contains in popular form a large amount of information which is very useful about the home. In addition to discussing weighing and measuring as done in the up-to-date kitchen, this circular treats of the measurement and economical use of electricity, gas, and water, etc. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents each.

The fundamental unit of the metric system is the METER (the unit of length). From this the units of mass (GRAM) and capacity (LITER) were derived. All other units are the decimal subdivisions or multiples of these. These three units are simply related, so that for all practical purposes the volume of one kilogram of water (one liter) is equal to one cubic decimeter.

When the meaning of the three units and the six prefixes (shown in second column) is known, the metric system is understood. The design of the system makes it self-explanatory. The tables of derived units form themselves automatically. No tables need be or should be memorized.

Smaller and larger units are named by combining the proper numeral prefix with the name of the basic unit. The new term is self-defining—for example, “centi-meter.” Here “centi-” means “the one-hundredth part of,” and “meter” means “the unit of length,” so that “centi-meter” expresses precisely its meaning, “the one-hundredth part of the unit of length.” Every other metric term is as easily formed and expresses as clearly its own definite meaning.

One meter=39.37 inches (exactly); 1 liter=1.06 quarts (nearly); 1 gram=0.04 avoirdupois ounce (nearly).



Coal:

Name	Pounds per cubic foot	Name	Pounds per cubic foot	Name	Pounds per 1000 board feet	Pounds per cubic foot
<b>Coal:</b>		<b>Masonry:</b>		<b>Woods:</b>		
Bituminous (piled loose).....	44 to 54	Brickwork .....	100 to 140	Fir (balsam) .....	2170	26
Anthracite (piled loose).....	50 to 57	Roughly scabbled mortar rubble.....	140 to 150	Hemlock .....	2330 to 2550	28 to 31
Lignite (piled loose).....	23 to 32	Mortar, hardened.....	103	Maple .....	3250 to 3920	39 to 47
Charcoal of pine and oak.....	15 to 30	Sand .....	90 to 117	Oak .....	3080 to 4670	37 to 56
Earth (common loam):		Gravel.....	90 to 117	Pine (American white).....	1830 to 2580	22 to 31
Dry, loose.....	72 to 80	Trap, quarried, in loose piles	107	Pine (yellow).....	1920 to 3080	23 to 37
Moist, moderately packed.....	90 to 100			Poplar .....	1830 to 2580	22 to 31
Soft mud, packed.....	110 to 120			The wood is supposed to be seasoned and of		

**Woods:**

Name	Pounds per 1000 board feet	Pounds per cubic foot
<b>Woods:</b>		
Fir (balsam) .....	2170	26
Hemlock .....	2330 to 2580	28 to 31
Maple .....	3250 to 3920	39 to 47
Oak .....	3080 to 4670	37 to 56
Pine (American white) .....	1830 to 2580	22 to 31
Pine (yellow) .....	1920 to 3080	23 to 37
Poplar .....	1830 to 2580	22 to 31
The wood is supposed to be seasoned and of average dryness.		





# INTERNATIONAL METRIC SYSTEM

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Name	Value	Meaning
METER	1.	"the unit of length"
LITER	1.	"the unit of volume"
GRAM	1.	"the unit of weight"
ARE	1.	"the unit of area"
MILLI-	.001	"the thousandth part of"
CENTI-	.01	"the hundredth part of"
DECI-	.1	"the tenth part of"
DEKA-	10.	"ten times"
HECTO-	100.	"one hundred times"
KILO-	1000.	"one thousand times"

One meter=39.37 inches (exactly); 1 liter=1.06 quarts (nearly); 1 gram=0.04 avoirdupois ounce (nearly).



## APPROXIMATE WEIGHTS OF SOME COMMON MATERIALS

Name	Pounds per cubic foot	Name	Pounds per cubic foot	Name	Pounds per 1000 board feet	Pounds per cubic foot
<b>Coal:</b>		<b>Masonry:</b>		<b>Woods:</b>		
Bituminous (piled loose).....	44 to 54	Brickwork .....	100 to 140	Fir (balsam) .....	2170	26
Anthracite (piled loose).....	50 to 57	Roughly scabbled mortar rubble.....	140 to 150	Hemlock .....	2330 to 2580	28 to 31
Coke (piled loose).....	23 to 32	Mortar, hardened.....	103	Maple .....	3250 to 3920	39 to 47
Charcoal of pine and oak....	15 to 30	Sand .....	90 to 117	Oak.....	3080 to 4670	37 to 56
Earth (common loam):		Gravel.....	90 to 117	Pine (American white).....	1830 to 2580	22 to 31
Dry, loose.....	72 to 80	Trap, quarried, in loose piles.....	107	Pine (yellow).....	1920 to 3080	23 to 37
Moist, moderately packed.....	90 to 100			Poplar.....	1830 to 2580	22 to 31
Soft mud, packed.....	110 to 120			The wood is supposed to be seasoned and of average dryness.		

Solid with rectangular sides..... Volume=length×width×height

Cylinder:

Area (exclusive of that of ends)=3.1416×diameter×height  
Volume=0.7854×diameter×diameter×height

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## HEIGHTS AND WEIGHTS OF CHILDREN

AGE	BOYS					GIRLS					AGE	BOYS					GIRLS					
	Height		Weight			Height		Weight				Height		Weight			Height		Weight			
yr. mo.	inches	centi-meters	lbs.	oz.	kilograms	inches	centi-meters	lbs.	oz.	kilograms	yr. mo.	inches	centi-meters	lbs.	oz.	kilograms	inches	centi-meters	lbs.	oz.	kilograms	
At birth	20 1/2	52.3	7	10	3.45	20 1/2	52.1	7	3	3.25	2	3	33 1/2	85.7	27	2	12.30	33 1/2	84.8	26	6	11.96
3	23 1/2	59.7	13		5.90	22	55.9	13	0	5.90	2	3	34 1/2	88.3	29		13.15	33 1/2	86.0	27	4	12.36
6	26 1/2	67.3	18		8.16	25 1/2	65.7	16	12	7.60	2	6	35 1/2	89.9	29	8	13.38	34 1/2	88.6	28	4	12.81
7	27 1/2	69.2	19	2	8.68	26 1/2	67.3	17	6	7.88	2	9	36 1/2	91.8	30	10	13.89	35 1/2	90.5	29	2	13.21
8	27 1/2	70.2	19	12	8.96	27	68.6	18	4	8.28	3		37 1/2	94.3	32	4	14.63	36 1/2	93.3	30	8	13.84
9	28 1/2	71.4	20	0	9.24	27 1/2	70.2	19	2	8.68	3	3	37 1/2	96.2	33	2	15.02	37 1/2	94.6	31	10	14.34
10	28 1/2	72.4	20	14	9.47	27 1/2	70.8	19	8	8.84	3	6	38 1/2	98.1	33	12	15.31	38 1/2	96.5	32	8	14.74
11	29	73.7	21	6	9.70	28 1/2	72.1	20	2	9.13	3	9	39	99.1	34	8	15.65	38 1/2	97.8	33	4	15.08
1 1	29 1/2	74.6	21	14	9.92	28 1/2	73.3	20	12	9.41	4		39 1/2	100.3	35	14	16.27	39	99.1	33	12	15.31
1 1	29 1/2	75.9	22	14	10.38	29 1/2	74.6	21	9	9.52	5		41 1/2	105.7	41	2	18.64	41 1/2	104.8	39	11	18.01
1 2	30 1/2	76.8	23		10.43	29 1/2	74.9	21	10	9.81	6		43 1/2	111.1	45	3	20.50	43 1/2	110.2	43	5	19.64
1 3	30 1/2	78.1	23	10	10.72	30 1/2	76.5	21	14	9.92	7		45 1/2	116.2	49	2	22.27	45 1/2	115.6	47	8	21.55
1 4	31 1/2	79.1	24	2	10.94	30 1/2	77.5	22	10	10.26	8		47 1/2	121.3	53	14	24.45	47 1/2	121.0	52		23.59
1 5	31 1/2	79.7	24	8	11.11	30 1/2	78.1	22	14	10.38	9		49 1/2	126.4	59	3	26.55	49 1/2	125.4	57	2	25.90
1 6	31 1/2	80.6	24	10	11.17	31 1/2	79.1	23	6	10.60	10		51 1/2	131.4	65	5	29.62	51 1/2	130.2	62	6	28.30
1 7	32 1/2	81.9	25	8	11.57	31 1/2	80.0	23	12	10.77	11		53 1/2	135.3	70	3	31.84	53 1/2	135.6	68	13	31.21
1 8	32 1/2	82.9	25	12	11.68	32 1/2	81.3	24	2	10.94	12		55 1/2	140.0	76	14	34.88	55 1/2	141.9	78	5	35.52
1 9	32 1/2	83.5	25	12	11.68	32 1/2	81.9	24	12	11.23	13		57 1/2	145.4	84	13	38.46	57 1/2	148.0	88	11	40.23
1 10	33 1/2	84.4	26	14	12.19	32 1/2	82.9	25	4	11.45	14		59 1/2	152.1	94	14	42.05	59 1/2	152.1	98	6	44.63
1 11	33 1/2	85.4	27		12.25	32 1/2	83.5	25	10	11.62	15		62 1/2	158.1	107	2	48.58	61 1/2	155.3	106	2	48.13
											16		65	165.1	121		54.88	61 1/2	156.5	112		50.80

The data for this table were furnished by the Children's Bureau, United States Department of Labor, and is collated from such leading authorities as Holt, Crum, Bowditch, and others. There is a variation in height and weight of healthy children of the same age which should be taken into account in using the above figures to judge normal development.



